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AIR COMMAND AND STAFF COLLEGE

STUDENT REPORT

THE BEKAA VALLEY - A CASE STUDY

MAJOR DAVID E. CLARY 88-0550

"insights into tomorrow"

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The combined arms effort of the Israelis against the Syrians in Lebanon's Bekaa Valley in June 1982 was one of the most spectacular and lopsided operations from modern warfare. This case study reexamines that operation, specifically the suppression of enemy air defenses and the air battle. The study concludes with some lessons learned.

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ABOUT THE AUTHOR

Major David E. Clary is a 1976 graduate of the U.S. Air Force Academy. Following graduation, he attended Undergraduate Pilot Training at Williams A.F.B., Arizona. After earning his wings, he remained as a T-37 Instructor Pilot and Class Commander from 1978 to 1981. He was then assigned to R.A.F. Bentwaters as an A-10 Pilot from 1981 to 1984. While there, he commanded "C" Flight in the 511th Tactical Fighter Squadron. Major Clary then returned to the U.S. as an Exchange Officer in Attack Squadron 122 at Lemoore Naval Air Station, California. Here he served as an A-7E Instructor Pilot, Training Officer, and Assistant Operations Officer. He volunteered for sea duty in a Fleet Squadron and was assigned to Attack Squadron 27 in 1986. The squadron deployed aboard the U.S.S. Carl Vinson for a six month cruise to the Northern Pacific, Western Pacific, and Indian Ocean in August of that year. During this tour, he made 160 carrier landings. Major Clary has attended Squadron Officer School and Air Command and Staff College in residence in Montgomery, Alabama. He is also a graduate of the Navy's Strike Leader School in Fallon, Nevada. He has previously authored articles that have been published in TAC Attack and Approach Magazine.

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INTRODUCTION

The Bekaa Valley - A Case Study contains two chapters. The first chapter documents the need for the case study, while the second chapter contains the actual case study. This first chapter will begin with the reasons for the project. Next, it will introduce the Instructional System Development (ISD) process used in curriculum development. It will then document each step of the five steps within this process that insure a quality educational product.

BACKGROUND

This case study fulfills the research requirement for graduation from Air Command and Staff College (ACSC). This requirement hopefully achieves two goals. First, it gives the student the opportunity to practice his problem solving skills. And second, it gives the student the chance to create a product of practicality and immediate benefit to the U.S. Air Force (7:1). To achieve these goals, there are four general options available for research projects. One of them is the curriculum development project. This option involves the student in revisions of existing materials, or in the development of new materials for use in the ACSC curriculum (7:12). This particular project is a new case study that will hopefully be used in future classes. And this project, like all curriculum development projects, has two parts. The case study is one part. The second part, the problem solving part of the project, is the documentation of the Instructional System Development (ISD) process.

ISD OVERVIEW

AFM 50-2, Instructional System Development, defines Instructional System Development as "a deliberate and orderly process for planning and developing instructional programs which ensure that personnel are taught the knowledges,

skills, and attitudes essential for successful job performance." Air Force Regulation 50-8, Policy and Guidance For Instructional System Development (ISD), requires the use of the ISD process to document the development of Air Force curriculum. These instructions break the curriculum development process into five steps:

1. Analyze system requirements.

2. Determine educational and training requirements.

3. Develop objectives and tests.

4. Plan, develop, and validate instruction.

5. Conduct and evaluate instruction.

This orderly process begins with an analysis of the system requirements.

ANALYZE SYSTEM REQUIREMENTS

The first step in the ISD process, analyze system requirements, is the process of determining the human performance requirements of the job in terms of what must be done and how well it must be done. The result is a statement of all human activities (skills, knowledges, and attitudes) required for successful performance (4:1-3). For an ACSC curriculum development project, this first step is a determination of what must be taught (7:12).

For this project, the determination was based on the ACSC mission, ACSC curriculum goals, Theater Warfare lesson objectives, and finally, a memorandum from the National Defense University (NDU). The mission of ACSC is "to enhance the professional knowledge, skills, and perspectives of mid-career officers for increased leadership roles in command and staff positions (6:1)". To accomplish this mission, the school has set six goals. One of those goals is "to enhance knowledge and understanding of the Air Force's missions and capabilities (6:1)." Many of the lessons within the Theater Warfare Phase support this particular goal. This case study will contribute toward this goal. It will also contribute toward a Joint Specialty program that may be incorporated as a part of the ACSC curriculum. Title IV of the 1986 Goldwater-Nichols Department of Defense Reorganization Act requires the DOD to manage the more than 8000 officers in joint-duty assignments. The act requires that at least half of these billets be filled by officers who obtained joint Professional Military Training (1:63). The joint schools

currently administered by the National Defense University (NDU) cannot graduate enough officers to meet this new requirement. One option currently under consideration is to accredit ACSC to produce joint graduates (1:63). As a part of this option, NDU has published a memorandum, detailing a joint curriculum that includes specific learning objectives. One of those objectives is to "Understand why selected joint military operations failed or succeeded at the operational level (8:1)." The purpose of this case study is to provide an example of one such joint operation. If a joint curriculum becomes a reality at ACSC, this case study could serve as the foundation for a new seminar. With the purpose or "what must be taught" determined, then the education or training requirements can be defined.

DETERMINE EDUCATIONAL/TRAINING REQUIREMENTS

The second step in the ISD process, determine the educational or training requirements, is the process of determining the changes needed in skills, knowledges, and attitudes of personnel, so they can perform a job (4:1-3). For an ACSC curriculum development project, this step is an identification of how much is already known (7:12). Four instruments were used to identify the level of student knowledge about Air Force missions: the Warfare Studies Survey, the ACSC student fact sheet, the Pre-test results, and an ACSC survey (9:C-1).

The first instrument, the Warfare Studies survey, was a 12 question survey given to 100 Air Force students selected at random during the first day of in-processing at ACSC (9:C-1). This survey indicated 85% of these students could not identify the Air Force mission associated with destroying/neutralizing enemy airpower, 89% could not list the Air Force missions, and 97% could not identify the basic manual that describes U.S. Army doctrine. Based on the overall results of the survey, the Theater Warfare instructors concluded the basic knowledge level of the students was very low in the area of Air Force and Army doctrine, missions, roles, and tasks. In addition, knowledge was probably low on organization, issues, future challenges and capabilities as they relate to readiness, deployment, employment, sustainability, redeployment, and issues and future challenges (9:C-1).

The second instrument, the ACSC student fact sheet, indicated the class had experience in 42 different career fields (9:C-2). Based on this fact, the Theater Warfare instructors assumed most of the students had spent their

career in one specialized area. Their knowledge within their career field was high, but broad general knowledge was low. The instructors also assumed very few students had a good knowledge of the entire Theater Warfare curriculum. The students' ability to plan and orchestrate joint warfare at the theater level was also probably low to non-existent (9:C-2).

The third instrument, the ACSC pre-test, is given to all students on arrival to determine their entry level knowledge (9:C-3). There are 16 questions relating to Theater Warfare on this test. The results were similar to those of the Warfare Studies survey: 65% did not know the basic mission of tactical airpower, 74% could not define counter air, 63% could not define close air support, and 64% could not apply their basic knowledge of the Air Force mission of counter air to a combat scenario. The majority of students could answer only one of the 16 questions correctly. Again, the assumption was the students' knowledge and comprehension of basic Air Force missions, roles, and tasks was very low. And if Air Force operational knowledge is low, sister service, allied, and joint operational knowledge is probably lower (9:C-3).

The final instrument, the ACSC survey, was designed as a Zero-Base curriculum study to revalidate the curriculum used for Theater Warfare (9:C-5). This survey measured the amount of the students' experience, knowledge, and ability in the area of Theater Warfare. This survey confirmed the other results. Student experience, knowledge, and ability in Theater Warfare was low. Having identified what must be taught and how much is already known, curriculum development is ready to progress to the third step (9:C-5).

DEVELOP OBJECTIVES AND TESTS

The third step in the ISD process, develop objectives and tests, is the process of specifying the objectives the student must meet to satisfy the training requirements, and the process of developing and administering tests which directly measure attainment of those objectives (4:1-3). For an ACSC curriculum development project, this step provides lesson objectives, samples of behavior, and test questions for individual lessons (7:12).

The lesson objectives, samples of behavior, and test questions are accomplished by the instructors of the Theater Warfare phase. The specific objective for this project can remain exactly as stated in the NDU memorandum, "Understand why selected joint military operations failed or succeeded at

the operational level (8:1)." Because of the uncertainty of a future joint ACSC curriculum, the Theater Warfare instructors requested a case study and not an entire seminar lesson. Its eventual use will be dependent on the nature of the future curriculum. Specific lesson objectives, samples of behavior, and test questions will be developed if the case study is used.

PLAN, DEVELOP, AND VALIDATE INSTRUCTION

The fourth step in the ISD process involves the planning, development, and validation of instruction (4:1-4). As the name implies, the method and media for instruction are planned, instructional materials are developed, and then the instructional materials are validated and revised as necessary (4:1-4). The case study method was selected because of the uncertainty of the future curriculum. And for the same reason, no specific seminar lesson was developed to examine or use this case study. The only accompanying instructional materials developed included a bank of possible discussion questions that could be used in a seminar situation (Appendix B). The development of the case study within this ISD step represented the major portion of this research project. The validation of this case study as an instructional aid will be made by the Theater Warfare instructors upon inclusion into a seminar lesson.

CONDUCT AND EVALUATE INSTRUCTION

The final step of the ISD process, conduct and evaluate the instruction, was beyond the scope of this project (7:13). This step will be completed when the case study is incorporated into the curriculum. Evaluation is accomplished by the seminar chairpersons and faculty instructors via AU Form 629. Their critiques, in addition to student test performance at the end of the Theater Warfare phase, will serve as measures of the effectiveness of instruction.

SUMMARY

The Bekaa Valley - A Case Study is a two part project. The first chapter documents the Instructional System Development process used to develop the case study. The five part ISD process is a deliberate and orderly process for planning and developing instructional programs. The next chapter contains the case study, the second part of this project.

Chapter Two

BEKAA VALLEY OPERATIONS

INTRODUCTION

On June 9, 1982, the Israeli Defense Force (IDF) launched an attack against 19 Syrian SA-6 SAM (Soviet made surface to air missile) sites in Lebanon's Bekaa Valley. The results of this 10 minute attack were impressive. Israeli forces destroyed 17 of the 19 SA-6 sites without the loss of one attacking aircraft (14:7). The air battle waged overhead between the Israelis and Syrians was equally impressive. In the next few days, Israeli flyers shot down 85 Syrian aircraft, again without losing one of their aircraft (14:9). It should be noted that the Israelis have not declassified their activities in this operation. Nevertheless, there is enough unclassified information to paint a fair picture of the events. And it is hard to deny that this was probably one of the largest and most lopsided air battles in modern aviation history (23:55). Are there some lessons that could be learned? Most analysts believe there were.

The purpose of this case study is to describe an example of a successful joint military operation in modern warfare. This study will begin with a review of the events that led toward the Bekaa Valley operations, followed by a description of the attack on the SAM sites, then a description of the air battle, and will close with an examination of some lessons learned for future conflicts.

BACKGROUND

Any attempt to describe the Bekaa Valley operations must begin with a review of why the Israelis invaded, which plans they considered, and which plan they implemented for the invasion.

The underlying animosities between Israel and her neighbors are rooted in ancient history, but the specific reasons stem from the Palestinian Liberation Organization's (PLO's) shelling of northern Israeli settlements from the end of the 1973 Arab-Israeli war until 1982. During this time,

the PLO shelled these settlements 1,548 times killing 103 people. The general response to these attacks was to strike back with an air raid, border raid, or counter shelling whenever feasible. By 1978, the Israeli counter attacks were losing their effectiveness as a preventive measure. In March of that year, the IDF launched Operation Litani. Its purpose was to drive the PLO north of the Litani River in Lebanon and create a 25 kilometer buffer zone free of any PLO (see map, page 23). International pressure forced the Israelis to withdraw, and they were replaced by a United Nations Force to maintain peace within the buffer zone and to reestablish Lebanese authority. Unfortunately for Israel, the PLO took advantage of the situation and repositioned their forces within the zone and began the attacks on northern Israel again. Bolstered by the appointment of Ariel Sharon and other hawks to positions within the Defense Ministry, political pressure began to build to take strong action against the PLO to end the problem once and for all. On 3 June 1982, terrorists shot Shlomo Argov, the Israeli ambassador to the United Kingdom. The Israelis blamed the PLO. Two days later, the Israeli cabinet met and decided to attack. At 11:00 AM on 6 June 1982, the IDF launched Operation Peace for Galilee and moved into Lebanon (13:54-59).

Plans for this invasion had begun a year and a half before and there were at least three different plans circulated among military and political leaders. The first plan called for an invasion 40 kilometers into Lebanon. Its purpose was to destroy the PLO in the south and their ability to terrorize northern Israeli settlements. This plan was similar to the limited incursion in 1978, Operation Litani. It avoided engagement with the Syrians. The second plan was similar to the first except that the IDF would push as far north as Beirut. The third plan was the most ambitious and called for a war with both the PLO and the Syrians. Civilian leadership generally favored the first plan, and Defense Minister Sharon and some high-ranking military leaders favored the larger war of the third plan. The plan that was officially approved remains in question, but the results resembled the third plan (13:60-65).

Believers in the third plan felt they had good reason to take on the Syrians. The presence of 30,000 Syrian soldiers in Lebanon since the 1976 Lebanese Civil War, most of them in the Bekaa Valley, loomed as an offensive threat to Israel. There are only two real avenues of attack between Syria and Israel. One route is through Jordan, politically unacceptable for either country. The other avenue would be through the Bekaa (see map, page 24). Both Israel and Syria felt their own presence in the valley would be defensive, but

their enemy's presence would be an offensive threat. An Israeli invasion into Lebanon offered the opportunity to take this valley. From the start of the invasion, Sharon tried to convince the Prime Minister, Menachem Begin, that now was the time to drive the Syrians out. By the end of the second day, Sharon had convinced the Begin government that the Syrian SAM sites in the valley posed a threat to the Israeli Air Force operating west of the valley. This threat would hinder the advance of the IDF to Beirut. Begin ordered the attack (13:65-68).

SUPPRESSION OF ENEMY AIR DEFENSES

The IDF attack against the 19 Syrian SA-6 sites was the execution of a highly orchestrated, combined arms plan that stressed planning, intelligence, training, surprise, command, control, and communications, and countless elements of Electronic Combat in a three phased attack.

The overall plan for the Suppression of Enemy Air Defenses (SEAD) was designed to take advantage of two Syrian air defense mistakes (26:22). The most fundamental mistake was the lack of movement by the missile batteries (26:24). The SA-6 was designed as a mobile SAM system, yet the Syrians had their SA-6 batteries dug in for over a year in the Bekaa. This allowed the Israelis to pinpoint the precise location of each target. The second mistake was the lack of emission control by the Syrian SAM operators (26:24). The Syrians turned their radars on frequently, and often used more radars than required when practicing engagements. This allowed the Israelis to fingerprint or identify the exact radar frequencies used by the Syrians. The fingerprinting allowed for jamming operations and the targeting of anti-radiation missiles. Most of this information was the direct result of the Israeli prewar intelligence effort.

For a long time before the invasion, Israeli remotely piloted vehicles (RPVs) overflew the area defended by the Syrian SAMs and collected the intelligence which led to the development of the attack plan. The two workhorses of this effort were the Mastiff and the Scout (17:108). The Mastiffs contained a gyro-stabilized television and a high-resolution panoramic camera which proved extremely effective in photo-reconnaissance. The Scouts were configured for electronic intelligence and picked up the radar emissions which enabled the fingerprinting of the SAM radars. Both RPVs were capable of relaying their information to ground and airborne command posts for immediate analysis (25:42). But good intelligence and a good plan must be followed by training to make the most of the prewar effort.

The IDF conducted extensive northern border training exercises which were actually rehearsals for the upcoming invasion (15:11). These exercises, which were held for over 13 months, included rehearsal sorties against simulated SA-6 sites in the Negev desert (14:5). Countless rehearsals eliminate many of the problem areas that planners do not always foresee in coordinating an integrated plan. These rehearsals were intended to reduce some of the fog and friction of war for military leaders, soldiers, and aviators. The rehearsals also achieved a planned desensitization of the PLO and Syrians (22:53). Fearing that a real invasion was underway, the PLO and Syrians reacted to the first five northern border exercises. There was not a real response to the remaining rehearsals, nor the real thing.

Israel was able to achieve real surprise in their invasion because of Palestinian "alert fatigue" or "cry wolf" syndrome, because the PLO assumed they had developed a deterrent to an Israeli invasion, and because the Syrians assumed an attack against their SAM sites too risky. The IDF actually invaded on their ninth exercise and found no real resistance thanks to their planned desensitization (22:53). A second reason for their surprise was the PLO assumed they had a real deterrent to invasion (22:53). They incorrectly assumed their threatened massive rocket attacks against northern Israeli settlements and the threat of Syrian military reaction would deter. And finally, with the devastating success of the SA-6 against Israeli aircraft in the 1973 war, Syrians concluded the Israelis would consider an attack against the SAM sites too risky (22:54). With the element of surprise in hand, along with a good plan, precise intelligence, and with extensive training completed, Israel now looked to her military commanders to conduct the fight.

Israeli commanders proved that an effective command, control, and communications (C3) system is the essential ingredient to successfully integrate a combined arms effort (15:14), and that denial of C3 to the enemy will take a serious toll on battlefield effectiveness (17:107). C3 is the nervous system of a modern military force and the tactical commander is the brain. In the Israeli SEAD effort, the tactical commander received most of his information through an Israeli version of the Boeing 707 and from E-2C aircraft. The 707 served primarily as an electronic support measures (ESM) and electronic countermeasures (ECM) platform (29:45). ESM involves the gathering of communication and electronic intelligence. ECM primarily involves the jamming and deception of enemy communications. The E-2C served primarily as an airborne command post. With the facilities

aboard these aircraft, the tactical commander was able to process real time intelligence, develop a true picture of the tactical situation, coordinate his offensive assets with the proper timing, monitor the attack in progress, and then immediately assess the effectiveness of the attack. Furthermore, the tactical commander was also able to coordinate the jamming and deception that so effectively disrupted Syrian defenses (11:200). On the afternoon of 9 June 1982, the tactical commanders within this effective C3 system commenced their three phase attack which emphasized electronic combat.

The first phase of the attack, deception, involved the stimulation of the Syrian radar systems (23:53). The initial drones over the target were probably a combination of Mastiffs and Scouts. These drones reverified the locations of the SAM sites and their radar frequencies, and also served to stimulate the radars into activity. The slow speed of the Mastiffs and Scouts probably did not generate any more than the usual amount of disinterest shown over the last year (14:6). The large force of air-launched Samsons and ground-launched Delilahs, though, did receive their full attention (14:6). These decoy drones more closely resemble the speed and appearance of attacking aircraft when viewed on a radar screen. The direction of the attack placed the afternoon sun directly behind the incoming drones, degrading Syrian optical guidance systems on the SAMs. This forced greater reliance on their radar and increased vulnerability to anti-radiation missiles (30:17). The Syrians took the bait as expected (14:6). They showed poor target discrimination and firing discipline. They launched most of their available SAMs against the incoming drones (14:6). When the Boeing 707's ESM sensors confirmed the Syrian radars were fully activated and the SAM batteries were in their first reload cycle, the next phase of the attack was initiated.

The second phase integrated many activities into an extremely effective harassment and suppression effort. The 707 now used its ECM capabilities and began to jam Syrian radar frequencies, blinding their missiles (29:45). The 707 was augmented with ground based jammers and with other airborne jammers located on CH-53 helicopters and on the attacking aircraft (12:90). Artillery fire, with their aim adjusted by the TV pictures from the Mastiff, now harassed the SAM operators. The sites were shelled with 105mm howitzer rounds and with Ze'ev missiles, carrying terminally guided cluster munitions (14:6,19:136). Chaff-dispensing rockets further obscured the radar picture for the Syrians (28:50). With radar screens blinded by jamming and chaff, and operators harassed by artillery fire, the Israeli Air

Force (IAF) went to work. F-4s launched their Shrike and Standard anti-radiation missiles which homed in on the radar signals emitted by the SAM radars, destroying the radar antennas (23:54). After this attack, the tactical commander was able to determine how many, and exactly which SAM sites remained effective. Armed with the information fed to him via RPV television pictures and the ESM assets aboard the 707, he then commenced the final phase of the attack (23:78).

The final phase of the attack destroyed the remaining pieces of the Syrian SAM sites in the Bekaa valley. The E-2C airborne warning and control aircraft now guided Israeli Air Force F-16s, A-4s, and Kfir C-2s. The E-2C vectored them through the undefended areas for the follow on attacks against the surviving radar vans and SA-6 missile launchers (14:7). Using standoff munitions, cluster bomb units, and general purpose bombs, the Israeli aircraft simultaneously attacked from multiple directions after a low level ingress (14:7). The Syrians continued to launch missiles from the now radarless sites in a futile effort to defend themselves (23:54). Lacking acquisition and target tracking capability without their radars, the missiles were ineffective against the maneuvering aircraft. The Syrians also tried to obscure the SAM sites with smoke to prevent the use of laser guided weapons by the Israelis. But the fires were started too late to create enough smoke for obscuration. In fact, this tactic only made target acquisition for the aviators much easier by highlighting the exact locations of the sites (23:54). Finally, the Syrian operators turned the remaining radars off to avoid destruction, the ultimate act of futility (30:18). Losing the battle on the ground, the Syrians launched Mig 21 and Mig 23 aircraft to intercept and repel Israeli aircraft (23:55).

THE AIR BATTLE

Unfortunately for the Syrians, they were flying into the teeth of an Israeli Air Force armed with unprecedented real-time intelligence, C3, superior weapon systems, and the confidence of another good plan (14:8).

The same RPVs, Boeing 707, and E-2C Hawkeyes that provided real-time TV reconnaissance and ESM intelligence for the SEAD effort, also provided Israeli commanders unprecedented real-time intelligence for the air battle. Using TV pictures relayed from RPVs loitering overhead Syrian airfields, the Israelis could actually watch the Mig 21s and 23s taking off (19:137). The E-2C could also monitor Mig activities from takeoff using its APS-125 radar and ALR-59 passive detection system. The APS-125 radar can scan three

million cubic miles of airspace and can detect and track fighters up to 250 miles away (25:44). The ALR-59 passive detection system can detect and classify signals to a distance of 500 miles (25:44). Alerted to the Mig takeoffs, the controllers aboard the E-2C could now vector Israeli F-15s and F-16s for the intercepts.

The excellent command, control, and communications provided by the E-2C to the Israeli fighters, and conversely the lack of C3 to the Syrian fighters, cost the Syrian Air Force dearly. Israeli E-2C controllers had a complete picture of how many Migs were airborne and exactly where they were. These controllers then vectored F-15s and F-16s for the kill. The E-2C also passed some of this sorting and vectoring responsibility to several F-15s who acted as mini-battle managers (14:8). This innovative use of the F-15 prevented the Syrians from effectively overloading and confusing E-2C controllers with masses of enemy fighters (18:30). On the other hand, denial of C3 was one of the main Israeli objectives in the air battle (17:108). They achieved their objective, and it proved decisive. Syrian C3 was disrupted by the jammers aboard the Boeing 707, IAF fighter aircraft, Arava Stol 202 aircraft, and the Mastiff and Scout RPVs (17:107). The Syrian fighters were effectively blinded when their Ground Controlled Intercept (GCI) radio frequencies were jammed (14:8). Syrian fighter tactics, like the Soviets, are highly dependent on the GCI controller's commands to successfully complete an airborne intercept. Without these commands or any other communications, these confused pilots literally did not know what to do (26:23). But how were the Israelis able to maintain their own C3 when the Syrians also jammed the airwaves? They employed sophisticated "frequency hopping" radios which are relatively unjammable by technology currently available (17:108).

In addition to these radios and the other systems already mentioned, the Israelis also employed many other state-of-the-art weapons systems which contributed to their success in the air battle. Probably the most important of these were the aircraft and the missiles employed by these aircraft (14:9). I have mentioned the use of F-15s and F-16s, but their use merits a closer look. The F-15 and F-16 were among the best, if not the best air superiority fighters available in 1982. The F-15's "look-down" radar allowed them to better manage the air battle, or in simpler terms, to manage who chased who (18:30). The maneuverability of both aircraft were for the most part superior to the Mig 21s and Mig 23s they fought against. Israeli air-to-air missiles were also superior to those carried by their foes (14:9). The AIM-9L heat seeking missile and the AIM-7E/F radar guided missiles are all-aspect missiles, which allow for a missile

shot from any direction (17:108). The Syrians carried older model missiles which required them to shoot Israeli aircraft from the rear. The Israelis had planned and practiced to take advantage of their strengths, and exploit these Syrian weaknesses.

Like the SEAD effort, the successful air battle waged by the Israelis was the product of a good plan that confused the Syrian pilots. The Israeli plan for real-time intelligence, maintenance of C3, denial of Syrian C3, and the use of E-2Cs and F-15s had all worked well to that point. The plan from there was to vector superior numbers of F-15 and F-16 fighters to the Syrians' blind sides and to launch all-aspect missiles. The Israelis knew the Mig "threat warning" receivers only provided a warning of a radar missile attack from the nose or tail of the aircraft (20:106). Therefore an attack from either wingtip would not be seen by Syrian radar warning receivers. Denied any information from their GCI controllers or threat warning receivers, the Syrians were sitting ducks for the Israelis with their highly maneuverable aircraft firing all-aspect missiles (20:106). The Syrians quickly lost all semblance of air discipline (14:9). Witnesses from the ground noted, "I watched a group of Syrian fighter planes fly figure-eights. They just flew around and around and obviously had no idea what to do next" (14:9). An IAF officer also commented, "The (Syrian) pilots behaved as if they knew they were going to be shot down and waited to see when it was going to happen and not how to prevent it or how to shoot us down" (14:9). The results were staggering. The IAF downed 23 Migs in this engagement while losing none of their aircraft. By the end of Operation Peace for Galilee, the IAF had destroyed 85 aircraft without losing one to enemy fighter action (14:9). Can we learn any lessons from these operations in the Bekaa Valley?

LESSONS LEARNED

The Israeli victory should be viewed in proper perspective, because it can be dangerous to draw large lessons from little wars (18:29). The Bekaa Valley operations were a part of a limited conflict fought under unique circumstances (18:29). It should be viewed as a victory of the Israeli system over the Syrian system. This victorious system used combined arms, outstanding command, control, communications, and intelligence, control of the electronic spectrum, technology, and painstakingly trained people (15:168).

The attack on the SAM sites in the Bekaa Valley was an excellent example of how the combination of air and land

action created an extremely effective synergism. Land based jammers, artillery, rockets, and missiles not only contributed, but participated in the destruction of the SAMs. Israeli joint combat operations were not encumbered with traditional roles and missions, which fostered innovative tactics capitalizing on the capabilities of each component (30:31). Israeli commanders were able to control these assets to achieve maximum combat capability (30:31).

Access or denial of command, control, communications, and intelligence to both commanders and warriors alike can make the difference. Israeli tactics were designed to safeguard their C3 and use real-time intelligence allowing them to maintain situational awareness and the initiative. Their tactics also included the denial of C3 to the Syrians creating confusion. These tactics worked well in the Bekaa Valley.

Control of the electronic spectrum is what determines access or denial of command, control, communications and intelligence. An integrated plan that includes jamming, RPVs, decoys, chaff, and anti-radiation missiles will probably be required in the future to defeat SAM sites and enemy aircraft without incurring unacceptable losses to friendly aircraft.

Qualitative superiority can be an effective force multiplier in the combat arena (30:32). The Israelis probably could have achieved air superiority in this air battle with less expensive airplanes and missiles. It is doubtful, though, they would have been able to achieve the same level of effectiveness (30:32). And the Israelis probably could have carried out their attack against the SAM sites without computerized weapons delivery systems or precision guided munitions. Again, effectiveness would have been lower (30:32). One can also hypothesize that losses would have been higher.

And finally, exceptional training and competent leadership play a huge role, if not the most important role in determining the outcome of an engagement. After nearly losing the 1973 Arab-Israeli war, Israeli forces received the most realistic training in the world (18:29). Specific exercises and training missions for an attack into the Bekaa had occurred since April 1981 (24:145). When the battle commenced, Israeli fighter pilots flew over 1200 high stress combat sorties in advanced jet fighters and lost only one or two aircraft to poor maintenance, pilot error, poor armament, or turnaround support (18:29). Any air force in the world would be hard pressed to match that kind of readiness.

Yet in closing, even the Israelis caution against trying to generalize all-encompassing lessons from this engagement because of the uniqueness of this situation (14:10). First of all, the operation was very limited in scope, intensity, objectives, and participants. Second, the SAM threat was primarily fixed SA-6s whose positions were well known. And third, the IAF maintained a numerical superiority and the tactical initiative at all times (14:10). Nevertheless, there can be no denying the impressiveness of the Israeli performance.

SUMMARY

The purpose of this case study was to describe an example of a successful joint military operation in modern warfare. This study began with an examination of the events that led to the Operation Peace for Galilee invasion, followed by a description of the combined arms attack against the Syrian SA-6 sites, then a description of the air battle that blind-sided the Syrian Migs, and concluded with a cautious look at possible lessons learned.

> Loss in a single battle may or may not establish who will be the victor of a war. However, ultimate defeat is only a matter of time when one's forces are totally swept from a battlefield. Such was the case in the overwhelming defeat of the Syrian forces by the Israelis ... in the Bekaa Valley of Lebanon early in the summer of 1982 (17:107).

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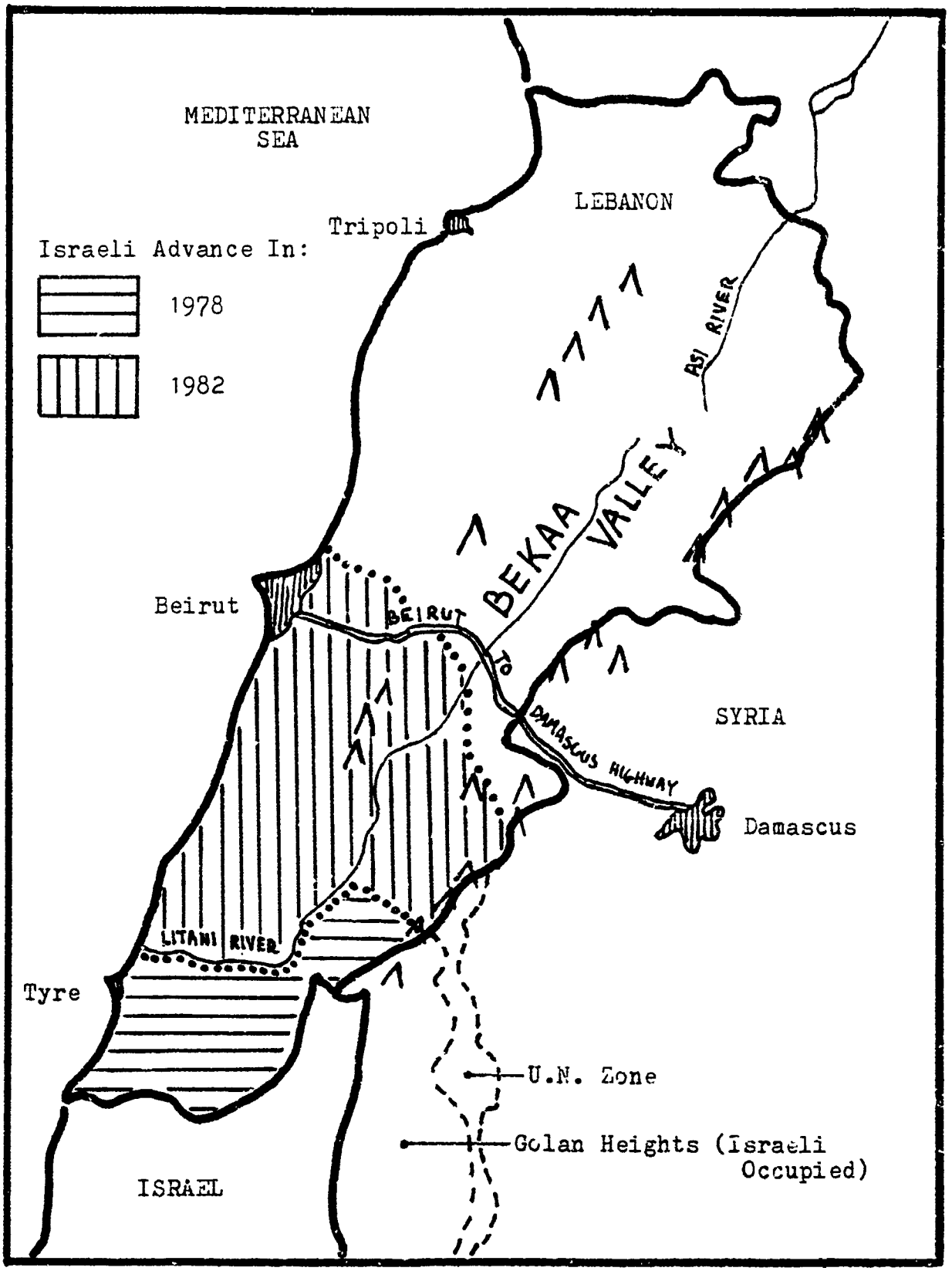
GLOSSARY

ACSC - Air Command and Staff College
AIM - Air Intercept Missile
ARM - Anti-Radiation Missile
C3 - Command, Control, and Communication
CAS - Close Air Support
ECM - Electronic Counter Measures
ESM - Electronic Support Measures
EW - Electronic Warfare
FLIR - Foward Looking Infrared Radar
GCI - Ground Controlled Intercept
IAF - Israeli Air Force
IDF - Israeli Defense Force
IR - Infrared
ISD - Instructional Systems Development
NDU - National Defense University
PLO - Palestinian Liberation Organization
RPV - Remotely Piloted Vehicle
SAM - Surface to Air Missile
SEAD - Suppression of Enemy Air Defenses

APPENDICES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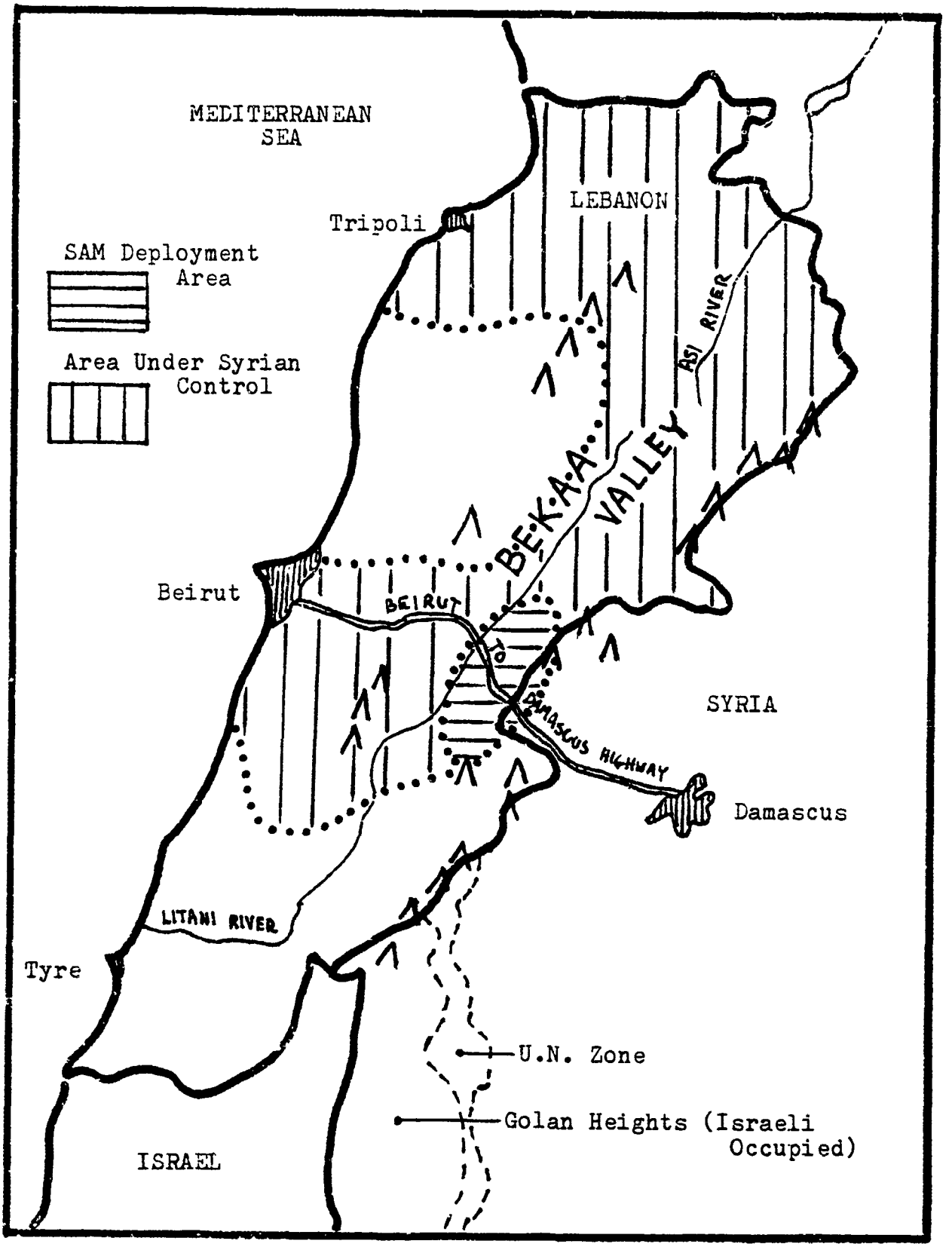
LEBANON
Tripoli
Israeli Advance In:
1978
1982
ASI RIVER
BEKAA VALLEY
Beirut
BEIRUT TO DAMASCUS HIGHWAY
SYRIA
Damascus
LITANI RIVER
Tyre
U.N. Zone
Golan Heights (Israeli Occupied)
ISRAEL


MEDITERRANEAN SEA
LEBANON
Tripoli
SAM Deployment Area
Area Under Syrian Control
ASI RIVER
BEKAA VALLEY
Beirut
BEIRUT
TO
SYRIA
DAMASCUS HIGHWAY
Damascus
LITANI RIVER
Tyre
U.N. Zone
Golan Heights (Israeli Occupied)
ISRAEL

POSSIBLE SEMINAR QUESTIONS

1. What factors were keys to success for the Israelis in this operation, but were considered weaknesses at Son Tay and Grenada?

- Intelligence and C3 are two good answers.

- - The availability of real-time intelligence cannot be overstated. The Israeli RPVs provided the precise location of the SAMs, and exactly how many and what type of Migs were being launched. The lack of accurate photographic or humint is generally blamed for the Son Tay raid that was launched against an empty prison camp.

- - Israeli command, control, and communication were instrumental in their success. Their use of the E-2s and F-15s helped to manage the right firepower at the right time and place. They were also able to maintain communication while denying it to the enemy. In Grenada, there were many examples of poor C3 between elements of the joint forces. This poor communication also hampered the efficient use of forces.

2. What were the key factors to success?

- Any of the factors can be argued as being key.

- - Planning took advantage of Syrian air defense mistakes and air to air weaknesses. The SEAD plan exploited lack of SAM mobility. The air battle plan took away Syrian GCI capability and attacked the the Migs from the blind spots in their RWR coverage.

- - Accurate intelligence paves the way for many of the principles of war such as mass, economy of force, surprise, maneuver, timing and tempo.

- - Training can eliminate much of the fog and friction of war. In this case, the training exercises also created a "cry wolf" syndrome which gave them the element of surprise.

- -The Israelis are believers in the principle of surprise. The PLO did not expect the invasion. The Syrians did not

expect an attack on their SAM sites.

- - Command, control, and communications is necessary to coordinate a combined arms effort.

- - Control of the electronic spectrum will provide/deny C3. It will also provide/deny success in the SEAD and air battle.

- - Superior weapon systems can be influential in battle if the technological advantages are exploited. The Israelis exploited these advantages and the systems generated a force multiplier effect.

3. Why was it important to destroy the SAMs?

- The Israelis felt the SAM sites in the Bekaa had to be negated to continue with their ground advance into Lebanon. Close air support performed in a high threat (SAM) environment is difficult. Weapons accuracy is lower and the threat to CAS aircraft survivability is high. In the opinion of the Israelis, the threat was too high.

4. Why was the air battle important?

- The destruction of so many Syrian Migs gave the Israelis air superiority over Lebanon. This air superiority coupled with the destruction of the Syrian SAMs allowed the Israelis to fly CAS and airlift missions with impunity. It should be noted that the deaths of some of Syria's best fighter pilots were probably more instrumental in giving the Israelis air superiority than the loss of aircraft.

5. Can the lessons learned be applied to other scenarios?

- Yes and no. Some of the general lessons mentioned earlier still apply. Many of the principles of war were again validated. But, one must be careful. Many circumstances are unique to this operation. Small geographic area, technological superiority, pinpointed threat location, training against a specific threat, and combat experience to name a few.

6. What roles did the RPVs and drones play?

- A huge part. The RPVs provided real-time photographic and signal intelligence. The drones stimulated the SAM batteries into firing their missiles.

7. What other roles can you envision RPVs playing in future conflicts?

- Potential applications are numerous. Here are a few examples.

- - IR battlefield mapping using FLIR cameras

- - Various EW and ECM operations

- - Miss-distance indication and other fire control missions for artillery and naval gunfire support

- - Laser target designation

- - Delivery of explosive charges

- - Direct target attack

- - Anti-radiation attack

- - Communications relay

8. The Syrians modeled their air operations after the Soviets. Does this mean that the Soviet system is weaker than ours?

- This was a conflict between the Israeli system and the Syrian system. It was not an indication of NATO superiority over the Warsaw Pact. The Soviets do not always export their best equipment, and their capabilities have increased since that time. The Soviets now fly the SU-27 and Mig-29 which are comparable to our newest fighters. Their missiles and other weapons systems have also been improved. With proper training, an Air Force armed with the Soviet's latest equipment would be a formidable foe.

9. What role did service rivalry play in this operation compared to a Son Tay, Iranian rescue, or Grenada?

- By all accounts, not as big. Partially due to their size and the nature of their enemies, the different arms of the Israeli forces are not as prone to parochialism as U.S. armed forces. The Israelis are not encumbered with traditional roles and missions. Their cooperation fosters innovative tactics capitalizing on the capabilities of each component.